



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

NOTICE OF ACCEPTANCE (NOA)

**MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION**

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www.miamidade.gov/economy

The Garland Company, Inc.
3800 East 91st Street
Cleveland, OH 44105-2197

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Garland Modified Bitumen Roof System Over Steel Deck.

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA renews NOA No. 11-0621.20 and consists of pages 1 through 43.

The submitted documentation was reviewed by Jorge L. Acebo.



NOA No.: 12-1003.19
Expiration Date: 12/02/13
Approval Date: 12/13/12
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ROOFING SYSTEM APPROVAL

Category: Roofing
Sub-Category: Modified Bitumen
Material: SBS/SIS/SEBS
Deck Type: Steel
Maximum Design Pressure: -172.5 psf

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

TABLE 1

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
HPR Organic Base Sheet	36" x 72'	ASTM D 2626	Asphalt coated organic base sheet.
HPR Tri-Base Premium	36" x 72'	ASTM D 4601	Double asphalt coated, polyester/fiberglass/polyester scrim reinforced base sheet.
HPR Glasfelt	36" x 180'	ASTM D 2178, Type IV	Asphalt impregnated glass felt
HPR Premium Glasfelt	36" x 180'	ASTM D 2178, Type VI	Asphalt impregnated glass felt
HPR Glasbase	36" x 108'	ASTM D 4601, Type II	Asphalt coated fiberglass base sheet.
HPR Premium Glasbase	36" x 72'	ASTM D 4601, Type II	Asphalt coated fiberglass base sheet.
Millennium Base	39" x 51'5"	ASTM D 6162	Smooth surfaced, SBS modified coal tar, fiberglass/polyester reinforced base sheet.
HPR Torch Base Sheet	39" x 34'8"	ASTM D 6163	SBS modified, fiberglass reinforced, torch applied base sheet.
FlexBase Plus 80	39" x 34'8"	ASTM D 6162, Type III	SBS modified, fiberglass/polyester reinforced base sheet
FlexBase Plus 120	39" x 34'8"	ASTM D 6162, Type III	SBS modified, fiberglass/polyester reinforced base sheet
FlexBase E 80	39" x 34'8"	ASTM D 6162, Type III	SBS/SIS modified, fiberglass/polyester reinforced base sheet.
FlexBase E 120	39" x 34'8"	ASTM D 6162, Type III	SBS/SIS modified, fiberglass/polyester reinforced base sheet.
StressBase 80	39" x 52'	ASTM D 6163, Type I	SBS modified, fiberglass reinforced base sheet.
StressBase 120	39" x 52'	ASTM D 6163, Type I	SBS modified, fiberglass reinforced base sheet.
FlexBase 80	39" x 34'8"	ASTM D 6163, Type III	SBS modified, fiberglass reinforced base sheet.



<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
FlexBase 120	39" x 34'8"	ASTM D 6163, Type III	SBS modified, fiberglass reinforced base sheet.
BK Glasfelt	36" x 180'	ASTM D 4990, Type I	Coal Tar impregnated glass felt
BK Premium Glasfelt	36" x 180'	ASTM D 4990, Type I	Coal Tar impregnated glass felt
HPR Polyscrim Plus	40" x 324'	ASTM D 5726	Polyester felt
Millennium Mineral	39" x 26'	ASTM D 6162	Mineral surfaced, SBS modified coal tar, fiberglass/polyester reinforced membrane.
Millennium FR Mineral	39" x 26'	ASTM D 6162	Mineral surfaced, SBS modified coal tar, fiberglass/polyester reinforced membrane.
StressPly EUV FR Mineral	39" x 26'2"	ASTM D 6162, Type III	Mineral surfaced, SBS/SIS modified, fiberglass/polyester reinforced membrane.
StressPly EUV	39" x 34'8"	ASTM D 6162, Type III	Smooth surfaced, SBS/SIS modified, fiberglass/polyester reinforced membrane.
StressPly Plus	39" x 34'8"	ASTM D 6162, Type III	Smooth surfaced, SBS modified, fiberglass/polyester scrim membrane.
StressPly Plus FR Mineral	39" x 26'2"	ASTM D 6162, Type III	Mineral surfaced, SBS modified, fire retardant, UV resistant, fiberglass/polyester scrim membrane.
StressPly E	39" x 34'8"	ASTM D 6162, Type III	Smooth surfaced, SBS/SIS modified, fiberglass/polyester reinforced membrane.
StressPly E FR Mineral	39" x 26'2"	ASTM D 6162, Type III	Mineral surfaced, SBS/SIS modified, fire retardant, fiberglass/polyester reinforced membrane.
StressPly IV Plus	39" x 26'2"	ASTM D 6162, Type III	Smooth surfaced, SBS modified, fiberglass/polyester reinforced, torch applied cap sheet.
StressPly IV Plus Mineral	39" x 26'2"	ASTM D 6162, Type III	Mineral surfaced, SBS modified, fiberglass/polyester reinforced, torch applied cap sheet.
StressPly IV Plus UV Mineral	39" x 26'2"	ASTM D 6162, Type III	Mineral surfaced, SBS modified, fiberglass/polyester reinforced, torch applied cap sheet.
BiFlex Smooth	39" x 34'8"	ASTM D 6163, Type I	Smooth surfaced, SBS modified, fiberglass reinforced, cap sheet.
BiFlex Mineral	39" x 34'8"	ASTM D 6163, Type I	Mineral surfaced, SBS modified, fiberglass reinforced, cap sheet.
StressPly	39" x 34'8"	ASTM D 6163, Type III	Smooth surfaced, SBS modified, fiberglass scrim reinforced roofing membrane.
StressPly FR Mineral	39" x 26'2"	ASTM D 6163, Type III	Mineral surfaced, SBS modified, fire retardant, fiberglass scrim membrane.

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
VersiPly 60	39" x 34'8"	ASTM D 6163, Type III	Smooth surfaced, SBS modified, fiberglass scrim reinforced roofing membrane.
VersiPly 80	39" x 34'8"	ASTM D 6163, Type III	Smooth surfaced, SBS modified, fiberglass scrim reinforced roofing membrane.
VersiPly Mineral	39" x 26'2"	ASTM D 6163, Type III	Mineral surfaced, SBS modified, fiberglass scrim reinforced roofing membrane.
StressPly IV	39" x 26'2"	ASTM D 6163, Type III	Smooth surfaced, SBS modified, fiberglass reinforced, torch applied cap sheet.
StressPly IV Mineral	39" x 26'2"	ASTM D 6163, Type III	Mineral surfaced, SBS modified, fiberglass reinforced, torch applied cap sheet.
StressPly IV UV Mineral	39" x 26'2"	ASTM D 6163, Type III	Mineral surfaced, SBS modified, fiberglass reinforced, torch applied cap sheet.
Garla-Prime	5, 55 gallon	ASTM D 41	Non-fibered, quick drying asphalt roof primer
Garla-Prime WB	5, 55 gallon	ASTM D 41	Non-fibered, quick drying asphalt roof primer
Insul-Lock II	3 gallon	Proprietary	Polyurethane low rise insulation adhesive
Black-Knight	70 lb. keg	Proprietary	Polymer modified coal tar pitch.
Black-Knight LV Flood Coat	70 lb. keg	Proprietary	Polymer modified coal tar pitch.
Black-Knight CTP	200 lb. keg	Proprietary	Polymer modified coal tar pitch.
Black-Knight Cold	5, 55 gallon	Proprietary	Polymer modified coal tar pitch.
Green-Lock Membrane Adhesive	5 gallon	Proprietary	Cold process roof coating and adhesive.
Weatherking	5, 55 gallon	ASTM D 3019, Type III	Cold process roof coating and adhesive.
Weatherking Plus WC	5, 55 gallon	ASTM D 3019, Type III	Cold process roof coating and adhesive.
Weatherking Flashing Adhesive	5, 55 gallon	ASTM D 3019, Type III	Cold process roof flashing adhesive.
Garlastic KM Plus	60 lb. keg	TAS 121	SEBS modified, hot applied asphalt.
HPR All Temp Asphalt	100 lb. keg	TAS 121	Hot asphalt adhesive for modified bitumen and BUR roof systems.
GarMesh	6" x 150'	ASTM D 1668	SBR coated woven fiberglass reinforcing membrane.
Grip Polyester Firm	10 sq.	ASTM D 1682	Polyester reinforcing fabric for use in cold applied systems.
Grip Polyester Soft	10 sq.	ASTM D 1682	Polyester reinforcing fabric, for use in cold applied systems.
Pyramic	5, 55 gallon	Proprietary	White acrylic reflective roof coating
Solex	5, 55 gallon	Proprietary	White kynar Reflective roof coating

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
White-Knight	5, 55 gallon	Proprietary	White urethane reflective roof coating.
Garla-Shield	5, 55 gallon	ASTM D 1227, Type IV	Asphalt emulsion roof coating.
Silver-Shield	5, 55 gallon	ASTM D 2824, Type III	High solids, aluminized roof coating.
WeatherScreen	5, 55 gallon	ASTM D 4479, Type I	Asbestos-free, heavy-bodied, fiber-reinforced, fire-rated asphalt roof coating.
Garla-Brite	5, 55 gallon	ASTM D 4479, Type I	Asbestos-free, heavy-bodied, fiber-reinforced, fire-rated asphalt roof coating.
Energizer K Plus FR	5, 55 gallon	ASTM D 4479, Type I	Multipurpose, rubberized, liquid waterproofing membrane.
Green-Lock Flashing Adhesive	3.5 gallon	Proprietary	Trowel grade, roofing mastic for use in repair and patching against leaks in built-up roofs.
Black-Knight Mastic	5 gallon	Proprietary	Trowel grade, tar based roofing mastic for use in repair and patching.
Flashing Bond	5 gallon	ASTM D 4586	Trowel grade, asphalt based roofing mastic for use in repair and patching against leaks in built-up asphalt roofs.
Silver-Flash	5 gallon	ASTM D 4586	Trowel grade, asphalt based roofing mastic for use in repair and patching against leaks in built-up asphalt roofs.
Garla-Flex	2, 5 gallon pail	ASTM D 4586	Elastomeric, asphaltic compound formulated from a special weather and ozone-resistant thermoplastic rubber, plasticizing oils and bitumen. Asbestos free.

APPROVED INSULATIONS:

Product Name	Product Description	Manufacturer (With Current NOA)
ACFoam II	Polyisocyanurate foam insulation	Atlas Energy Products
ISO 95+GL	Polyisocyanurate foam insulation	Firestone
High Density Wood Fiberboard	Wood fiber insulation board	Generic
DensDeck, DensDeck Prime	Water resistant gypsum board	G-P Gypsum Corp.
H-Shield	Polyisocyanurate foam insulation	Hunter Panels, Inc.
ENRGY-3, ENRGY 3 PSI 25	Polyisocyanurate foam insulation	Johns Manville
Retrofit Board	Perlite insulation board	Johns Manville
Multi-Max FA-3	Polyisocyanurate foam insulation	RMax
SECUROCK Gypsum-Fiber Roof Board	Gypsum board	US Gypsum
Structodek High Density Fiberboard Roof Insulation	High Density wood fiber insulation board	Blue Ridge Fiberboard
FlintBoard ISO	Polyisocyanurate foam insulation	CertainTeed
Fesco Board	Expanded mineral fiber insulation	Johns Manville
FiberGlass Roof Insulation	Glass fiber/Mineral fiber insulation	Generic

APPROVED FASTENERS:

TABLE 3

Fastener Number	Product Name	Product Description	Dimensions	Manufacturer (With Current NOA)
1.	Dekfast Fasteners #12, #14 & #15	Insulation fastener for wood, steel and concrete decks		Construction Fasteners Inc.
2.	Dekfast Galvalume Steel Hex Plate	Galvalume hex stress plate.	2 7/8" x 3 1/4"	Construction Fasteners Inc.
3.	#12 Roofgrip Fasteners	Insulation fastener for wood and steel.		ITW Buildex Corp.
4.	AccuTrac Plate	Galvalume stress plate.		ITW Buildex Corp.
5.	OMG Fastener #12 & #14	Insulation fastener	3" square	OMG, Inc.
6.	OMG Fastener ASAP	Pre-assembled Insulation fastener and plate		OMG, Inc.
7.	3 in. Round Metal Plate	3" round galvalume AZ50 steel plate	3" round	OMG, Inc.
8.	Tru-Fast Fastener	Insulation fastener for steel and wood decks		The Tru-Fast Corp.
9.	Tru-Fast Plastic Plates	Polyethylene plastic plate	3" round	The Tru-Fast Corp.
10.	Tru-Fast HD Fastener	Insulation fastener for steel and wood decks		The Tru-Fast Corp.
11.	OMG Heavy-Duty Fastener	Insulation fastener for wood, steel and concrete.		OMG, Inc.
12.	Tru-Fast 3" Metal Insulation Plates	Galvalume MP-3 Stress Plates	3" round	The Tru-Fast Corp.
13.	OMG #15 XHD Fastener	Insulation fastener for steel and wood decks		OMG, Inc.
14.	Tru-Fast #15 EHD Fastener	Insulation fastener for steel and wood decks		The Tru-Fast Corp.
15.	Dekfast Galvalume Steel 3 in. Round	3" round galvalume AZ50 steel plate	3" round	SFS Intec, Inc.

EVIDENCE SUBMITTED:

<u>Test Agency</u>	<u>Test Identifier</u>	<u>Description</u>	<u>Date</u>
Dynatech Engineering Corporation Factory Mutual Research Corporation	#4530.05.95-1	TAS 114	05/31/95
	1B4A7.AM	FM 4470	12/15/97
	4B4A9.AM	FM 4470	12/31/97
	0Y5A6.AM	FM 4470	09/08/97
	3D3A5.AM	FM 4470	09/15/98
	3004392	FM 4470	09/21/99
	3000637	FM 4470	04/26/00
	0D9A0.AM	FM 4470	05/02/00
	3004907	FM 4470	05/16/00
	3009117	FM 4470	12/21/00
	3010113	FM 4470	11/18/02
	3019046	FM 4470	03/04/05
	3021718	FM 4470	04/11/05
	3031839	FM 4470	12/07/07
	3032471	FM 4470	04/18/08
	3032165	FM 4470	04/22/08
	3032021	FM 4470	08/25/08
	3033444	FM4470	08/28/08
	3032163	FM 4470	07/21/08
	3032647	FM 4470	07/28/08
PRI Asphalt Technologies, Inc.	GRD-03-02-01	ASTM D5147	01/07/98
	GRD-05-02-01	ASTM D5147	12/18/97
	GRD-06-02-01	ASTM D5147	01/09/98
PRI Construction Materials Technologies	GRD-054-02-01	ASTM D2626	11/17/11
	GRD-051-02-01	ASTM D2178	10/28/11
	GRD-052-02-01	ASTM D2178	10/28/11
Trinity ERD	4533.05.98-1-R1	TAS 114-J	09/09/11
	4544.11.06	TAS 114-J	11/02/06
	C8500SC.11.07-R1	TAS 117 / ASTM D6862	08/07/09
	G32950.06.10	ASTM D4601	06/11/10
	G32700.09.11-1	ASTM D4601	09/16/11
	G39620.07.12	ASTM D4990	07/02/12
	G37200.10.12-1-R1	ASTM D6163/D4798	12/05/12
	G37200.10.12-2-R1	ASTM D6162/D4798	12/05/12
	G37200.10.12-3-R1	ASTM D6162/D4798	12/05/12
	G37200.10.12-4-R1	ASTM D6162	12/05/12
	G37200.10.12-5-R1	ASTM D6162	12/05/12
	G37200.10.12-6-R1	ASTM D6162/D4798	12/05/12
	G37200.10.12-7-R1	ASTM D6162	12/05/12
	G37200.10.12-9-R1	ASTM D6162/D4798	12/05/12
	G37200.10.12-10-R1	ASTM D6163/D4798	12/05/12
	G37200.10.12-11-R1	ASTM D6163/D4798	12/05/12
	G37200.10.12-12-R1	ASTM D6163/D4798	12/05/12
	G37200.10.12-13-R1	ASTM D6162	12/05/12
	G39630.07.12	Physical Properties	07/12/12
Momentum Technologies, Inc.	EX22B7A	ASTM D 6162	04/11/07
	TX21G5A	ASTM D5147	04/25/06
	DX14C7A	ASTM D 6163	03/16/07
	EX11L5A	ASTM D 5147	03/19/07
	RX18C8A-R	ASTM D 6162/D6163	03/28/08
Atlantic & Caribbean Roof Consulting, LLC	ACRC 08-042	TAS 114-J	06/12/08
	ACRC 08-036	TAS 114-J	06/03/08

APPROVED ASSEMBLIES:

Membrane Type: SBS/SIS/SEBS

Deck Type 2I: Steel, Insulated

Deck Description: 18-22 ga. steel

System Type B(1): Base layer of insulation mechanically fastened, top layer adhered with approved asphalt.

Deck: 18-22 ga Grade C steel deck attached 6' o.c. (every flute) using 3/4" puddle welds to steel supports spaced maximum 5 ft. o.c.

All General and System Limitations apply.

One or more layers of any of the following insulations.

Base Insulation Layer

Insulation Fasteners **(Table 3)**

Fastener **Density/ft²**

ACFoam II, H-Shield

Minimum 1.5" thick

5

1:1.33 ft²

Note: Base layer shall be mechanically attached with fasteners and density described. Insulation panels listed are minimum sizes and dimensions; if larger panels are used the number of fasteners per board shall be increased maintaining the same fastener density (See Roofing Application Standard RAS 117 for fastening details).

Middle Insulation Layer (Optional)

Insulation Fasteners **(Table 3)**

Fastener **Density/ft²**

ACFoam II

Minimum 1.5" thick

N/A

N/A

Top Insulation Layer (Optional)

Insulation Fasteners **(Table 3)**

Fastener **Density/ft²**

Approved High Density Fiberboard, Structodek High Density Fiberboard Roof Insulation

Minimum 1/2" thick

N/A

N/A

DensDeck, DensDeck Prime

Minimum 1/4" thick

N/A

N/A

Note: Apply optional middle and/or top layer of insulation shall be adhered with approved hot asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs/100 ft². Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulations listed as the base layer shall only be used as the base layer with a second layer of approved top layer insulation installed as the final membrane substrate. Composite insulation panels may be used as a top layer placed with the polyisocyanurate side face down.

- Base/Ply Sheet:** One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt, HPR Premium Glasfelt or HPR Polyscrim Plus adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)
- Membrane:** One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq.
- Surfacing:** Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:
1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
 2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
 6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
 7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.
- Maximum Design Pressure:** -82.5 psf. (See General Limitation #7.)

Membrane Type: SBS/SIS/SEBS

Deck Type 2I: Steel, Insulated

Deck Description: 18-22 ga. steel

System Type B(2): Base layer of insulation mechanically fastened, top layer adhered with approved asphalt.

Deck: 18-22 ga Grade C steel deck attached 6' o.c. (every flute) using ¾" puddle welds to steel supports spaced maximum 5 ft. o.c.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, H-Shield Minimum 1.5" thick	5	1:1.33 ft ²

Note: Base layer shall be mechanically attached with fasteners and density described. Insulation panels listed are minimum sizes and dimensions; if larger panels are used the number of fasteners per board shall be increased maintaining the same fastener density (See Roofing Application Standard RAS 117 for fastening details).

<u>Middle Insulation Layer (Optional)</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II Minimum 1.5" thick	N/A	N/A

<u>Top Insulation Layer (Optional)</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
Approved High Density Fiberboard, Structodek High Density Fiberboard Roof Insulation Minimum ½" thick	N/A	N/A
DensDeck, DensDeck Prime Minimum ¼" thick	N/A	N/A

Note: Apply optional middle and/or top layer of insulation shall be adhered with approved hot asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs/100 ft² or in Insta-Stik Roofing Adhesive applied in continuous ¾ to 1 inch wide beads spaced 12" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulations listed as the base layer shall only be used as the base layer with a second layer of approved top layer insulation installed as the final membrane substrate. Composite insulation panels may be used as a top layer placed with the polyisocyanurate side face down.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq.
Or
One ply of HPR Torch Base Sheet, torch applied to coverboard.

Membrane: One ply of StressPly IV, StressPly IV UV Mineral, StressPly IV Mineral, StressPly IV Plus, StressPly IV Plus Mineral or StressPly IV Plus UV Mineral torch applied.

Surfacing: Optional for Stress Ply IV Mineral, StressPly IV UV Mineral StressPly IV Plus Mineral or StressPly IV Plus UV Mineral. Required for StressPly IV and StressPly IV Plus. Apply one of the below or any approved coating.

1. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
2. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
3. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design

Pressure: -82.5 psf. (See General Limitation #7.)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type B(3): Base layer of insulation mechanically fastened, top layer adhered with approved asphalt or adhesive.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, ENRGY 3, H-Shield Minimum 2.0" thick	1 & 2; 4, 7 & 11; 10 & 12	1:1 ft ²

Note: Base layer shall be mechanically attached with fasteners and density described. Insulation panels listed are minimum sizes and dimensions; if larger panels are used the number of fasteners per board shall be increased maintaining the same fastener density (See Roofing Application Standard RAS 117 for fastening details).

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
DensDeck Prime Minimum ½" thick	N/A	N/A

Note: Top layer of insulation shall be adhered in full mopping of approved hot asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs/100 ft² or with Insul-Lock II or Millennium Pourable Foam Insulation Adhesive applied in ¾"- 1" wide ribbons spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulations listed as the base layer shall only be used as the base layer with a second layer of approved top layer insulation installed as the final membrane substrate. Composite insulation panels may be used as a top layer placed with the polyisocyanurate side face down.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)
 Or
 One ply of HPR Torch Base Sheet, torch applied to coverboard

- Membrane:** One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.
- Or
- One ply of StressPly IV, StressPly IV UV Mineral, StressPly IV Mineral, StressPly IV Plus, StressPly IV Plus Mineral or StressPly IV Plus UV Mineral torch applied.
- Surfacing:** Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:
1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb./sq. or Black-Knight Cold at 5 gal/sq.
 2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
 6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
 7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.
- Maximum Design Pressure:** -112.5 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type B(4): Base layer of insulation mechanically fastened, top layer adhered with approved asphalt.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
ACFoam II, ENRGY 3, H-Shield Minimum 2.0" thick	1 & 2; 4, 7 & 11; 10 & 12	1:1 ft ²

Note: Base layer shall be mechanically attached with fasteners and density described. Insulation panels listed are minimum sizes and dimensions; if larger panels are used the number of fasteners per board shall be increased maintaining the same fastener density (See Roofing Application Standard RAS 117 for fastening details).

<u>Top Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
DensDeck Prime Minimum 1/2" thick	N/A	N/A

Note: Top layer of insulation shall be adhered in full mopping of approved hot asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs/100 ft². Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulations listed as the base layer shall only be used as the base layer with a second layer of approved top layer insulation installed as the final membrane substrate. Composite insulation panels may be used as a top layer placed with the polyisocyanurate side face down.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)

Membrane: One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb./sq. or Black-Knight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-142.5 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS

Deck Type 2I: Steel, Insulated

Deck Description: 18-22 ga. steel

System Type C(1): All layers of insulation simultaneously attached.

Deck: 18-22 ga Grade C steel deck attached 6' o.c. (every flute) using 3/4" puddle welds to steel supports spaced 5 ft. o.c.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, ENRGY-3, ENRGY-3 PSI-25, ISO-95+GL, H-Shield Minimum 1" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
Approved High Density Fiberboard, Structodek High Density Fiberboard Roof Insulation, Fesco Board, Retrofit Board Minimum 1/2" thick	1, 3, 5 & 8	1:3 ft ²
DensDeck, DensDeck Prime Minimum 1/2" thick	1, 3, 5 & 8	1:3 ft ²
Approved Fiber Glass Roof Insulation (Standard or Wide Flute) Minimum 15/16" thick	1, 3, 5 & 8	1:3 ft ²

Note: All layers of insulation shall be mechanically attached using the fastener density listed above. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt, HPR Premium Glasfelt or HPR Polyscrim Plus adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)
Or
Two or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium or approved ASTM D 4601, Type II ply sheet adhered with Weatherking or Weatherking Plus WC applied at 2 1/2 gal./sq.

- Membrane:** One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq. or with Weatherking or Weatherking Plus WC applied at 2½ gal./sq. (Note: VersiPly 60 is not compatible with Weatherking/Weatherking Plus WC.)
- Surfacing:** Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:
1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq. (asphalt applied systems only, Not compatable with Weatherking and Weatherking Plus WC applied systems)
 2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of GarlaBrite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
 6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
 7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.
- Maximum Design Pressure:** -45 psf (for all other applications)(See General Limitation #9.)
-60 psf (for coverboard of 1" thick High Density Wood Fiberboard mechanically attached at 1 per 2 ft² with asphalt applied membranes.)
(See General Limitation #7.)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners and 3/4" diameter washers spaced 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type C(2): All layers of insulation simultaneously attached.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Insulation Base Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ENRGY 3, ACFoam II, H-Shield, FlintBoard ISO or ENRGY 3 PSI-25 Minimum 1.5" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
SECUROCK Gypsum-Fiber Roof Board Minimum 1/2" thick	12 & 14	1:1

Note: All layers of insulation shall be mechanically attached using the fastener density listed above unless noted in the maximum design pressure. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Base/Ply Sheet: One ply of StressBase 80, StressBase 120, FlexBase 80, FlexBase 120, FlexBase Plus 80, FlexBase Plus 120, FlexBase E 80 or FlexBase E 120, with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq
Or
One ply of StressBase 80, StressBase 120, FlexBase 80, FlexBase 120, FlexBase Plus 80, FlexBase Plus 120, FlexBase E 80, FlexBase E 120, VersiPly 60 or VersiPly 80 adhered with Green-Lock Membrane Adhesive applied at 2 gal./sq.

Membrane: One ply of BiFlex Smooth, BiFlex Mineral, StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq. or with Green-Lock Membrane Adhesive applied at 2 gal./sq.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in BlackKnight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or BlackKnight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-75 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners and 3/4" diameter washers spaced 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type C(3): All layers of insulation are simultaneously fastened

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 2)</u>	<u>Fastener Density/ft²</u>
ENRGY 3, H-Shield, ENRGY 3 PSI-25, AC Foam II Minimum 1.5" thick	N/A	N/A
Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.		

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 2)</u>	<u>Fastener Density/ft²</u>
SECUROCK Gypsum-Fiber Roof Board Minimum 0.5" thick	12 & 14	1:1.33 ft ²

Note: All layers of insulation shall be mechanically attached using the fastener density listed above. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

System 1:	Base/Ply Sheet:	Two to four plies BK Glasfelt, BK Premium Glasfelt or HPR Polyscrim Plus, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
	Cap Sheet:	One ply of Millennium Mineral or Millennium FR Mineral, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
System 2:	Base Sheet:	One ply HPR Organic Base, HPR Glasbase, HPR Premium Glasbase, adhered in full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus at a rate of 25 lbs/sq. Or One ply Millennium Base, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
	Ply Sheet:	Two to three plies BK Glasfelt, BK Premium Glasfelt or HPR Polyscrim Plus, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
	Cap Sheet:	One ply of Millennium Mineral or Millennium FR Mineral, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.

- System 3: Base Sheet:** One ply HPR Organic Base, HPR Glasbase, HPR Premium Glasbase, adhered in full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus at a rate of 25 lbs/sq.
- Or
- Ply Sheet:** One ply Millennium Base, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
- Cap Sheet:** One ply of Millennium Mineral or Millennium FR Mineral, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
- System 4: Base/Ply Sheet:** Three to five plies BK Glasfelt, BK Premium Glasfelt or HPR Polyscrim Plus, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
- System 5: Base/Ply Sheet:** One ply HPR Organic Base, HPR Glasbase, HPR Premium Glasbase, adhered in full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus at a rate of 25 lbs/sq.
- Or
- Cap Sheet:** Two to four plies BK Glasfelt, BK Premium Glasfelt or HPR Polyscrim Plus, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.
- Surfacing:** (Required if no mineral cap sheet is used) Install one of the following:
1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight flood coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
 2. Minimum two coats of GarlaBrite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 3. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.
- Maximum Design Pressure:** -112.5 psf (See General Limitation # 7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners and 3/4" diameter washers spaced 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type C(4): All layers of insulation simultaneously attached.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
ACFoam II, H-Shield, Flintboard ISO, ENRGY 3 PSI-25		
Minimum 1.5" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
DensDeck Prime		
Minimum 1/2" thick	12 & 14	1:1.33 ft ²

Note: All layers of insulation shall be mechanically attached using the fastener density listed above. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Membrane: One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV or StressPly EUV FR Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-112.5 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel 1.5" Type B Grade 90 steel deck attached to steel channel-framing joists. Steel supports spaced 6' o.c. Deck fastened 5/8" puddle welds, 6" o.c.

System Type C(5): All layers of insulation are simultaneously fastened

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 2)</u>	<u>Fastener Density/ft²</u>
ENRGY 3		
Minimum 1.5" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 2)</u>	<u>Fastener Density/ft²</u>
SECUROCK Gypsum-Fiber Roof Board		
Minimum 0.5" thick	12 & 14	1:1ft ²

Note: All layers of insulation shall be mechanically attached using the fastener density listed above. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Primer: Prime SECUROCK Gypsum-Fiber Roof Board insulation board with ASTM D-41 asphalt primer at 1 gallon per square

Base/Ply Sheet: Three or more plies of BK Glasfelt, BK Premium Glasfelt or HPR Polyscrim Plus, adhered in full mopping of Black-Knight Coal Tar Pitch at a rate of 30 lbs/sq.

Cap Sheet: One ply of Millennium Mineral or Millennium FR Mineral, adhered in full mopping of Black-Knight or approved Type I or Type III Coal Tar Pitch at a rate of 30 lbs/sq.

Surfacing:

(Required if no mineral cap sheet is used) Install one of the following:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight flood coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
2. Minimum two coats of GarlaBrite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

**Maximum Design
Pressure:**

-120 psf (See General Limitation # 7)

Membrane Type: SBS/SIS/SEBS

Deck Type 2I: Steel, Insulated

Deck Description: 18-22 ga. steel 1.5" Type B Grade 90 steel deck attached to steel supports spaced 6' o.c. Deck fastened to supports with 5/8" puddle welds and washers, 6" o.c. (one in each flute) and along the side laps at 12" o.c. with #12 self drilling screws.

System Type C(6): All layers of insulation simultaneously attached.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ENRGY 3 Minimum 1.5" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
SECUROCK Gypsum-Fiber Roof Board Minimum 1/2" thick	7 & 13	1:1

Note: All layers of insulation shall be mechanically attached using the fastener density listed above unless noted in the maximum design pressure. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Primer: Prime SECUROCK Gypsum-Fiber Roof Board insulation board with ASTM D-41 asphalt primer at 1 gallon per square

Base/Ply Sheet: One ply of StressBase 80, StressBase 120, FlexBase 80, FlexBase 120, FlexBase Plus 80, FlexBase Plus 120, FlexBase E 80, or FlexBase E 120, with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq

Membrane: One ply of BiFlex Smooth, BiFlex Mineral, StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in BlackKnight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or BlackKnight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-127.5psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type C(7): All layers of insulation simultaneously attached.
All General and System Limitations apply.
 One or more layers of any of the following insulations.

<u>Base Insulation Layer (Optional)</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, ENRGY 3, H-Shield, Multi-Max FA-3 Minimum 1.5" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
DensDeck Prime Minimum 1/2" thick	1 & 2; 4, 7 & 11; 10 & 12	1:1 ft ²

Note: All layers of insulation shall be mechanically attached using the fastener density listed above. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)

Or

One ply of HPR Torch Base Sheet, torch applied to coverboard

Membrane: One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80, or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Or

One ply of StressPly IV, StressPly IV UV Mineral, StressPly IV Mineral, StressPly IV Plus, StressPly IV Plus Mineral or Stressply IV Plus UV Mineral , torch applied.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-150 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners and 3/4" diameter washers spaced 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type C(8): All layers of insulation simultaneously attached.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
ACFoam II, H-Shield, Flintboard ISO, ENRGY 3 PSI-25		
Minimum 1.5" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
DensDeck Prime		
Minimum 1/2" thick	12 & 14	1:1ft ²

Note: All layers of insulation shall be mechanically attached using the fastener density listed above. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Membrane: One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV or StressPly EUV FR Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-157.5 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners and 3/4" diameter washers spaced 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type C(9): All layers of insulation simultaneously attached.
All General and System Limitations apply.
 One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
ACFoam II, H-Shield, Flintboard ISO or ENRGY 3 PSI-25 Minimum 1.5" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density.

<u>Top Insulation Layer</u>	<u>Insulation Fasteners</u> <u>(Table 3)</u>	<u>Fastener</u> <u>Density/ft²</u>
SECUROCK Gypsum-Fiber Roof Board Minimum 1/2" thick	12 & 14	1:1 ft ²

Note: All layers of insulation shall be mechanically attached using the fastener density listed above. The insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Insulation fasteners shall be tested for withdrawal resistance in compliance with Testing Application Standard TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Base/Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Membrane: One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV or StressPly EUV FR Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in BlackKnight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or BlackKnight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-172.5 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel
System Type D(1): All layers of insulation and base sheet simultaneously attached.
Deck: 18-22 ga Grade C steel deck attached 6' o.c. (every flute) using 3/4" puddle welds to steel supports spaced 5 ft. o.c.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, ENRGY 3, ENRGY 3 PSI-25, ISO-95+GL, H-Shield Minimum 1" thick	N/A	N/A
<u>Top Insulation Layer (Optional)</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
Approved High Density Fiberboard, Structodek High Density Fiberboard Roof Insulation Minimum 1/2" thick	N/A	N/A
DensDeck, DensDeck Prime Minimum 1/4" thick	N/A	N/A

Note: All layers of insulation and base sheet shall be simultaneously attached. See base sheet below for fasteners and density. Refer to Roofing Application Standard RAS 117 for insulation attachment requirements. Insulation shall have preliminary attachment, prior to the installation of the roofing membrane. At an application rate of two fasteners per board for insulation boards having no dimension greater than 4 ft., and four fasteners for any insulation board having no dimension greater than 8 ft.

Base Sheet: *(Option #1)* One ply of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium or ASTM D4897, Type II approved base sheet fastened to the deck using OMG AccuTrac Fasteners and Plates spaced 12" o.c. in a 4" lap and 12" o.c. in two staggered rows in the center of the sheet.

(Option #2) One ply of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium or ASTM D4897, Type II approved base sheet fastened to the deck using SFS #12 fasteners with plates, OMG #12 or Heavy Duty Fasteners with OMG 3 in. Round Metal Plates, or OMG Accutrac Fasteners and Plates spaced 9" o.c. in a 4" lap and 9" o.c. in two staggered rows in the center of the sheet.

Intermediate

Coverboard: (Optional) 1/2" thick High Density Wood Fiberboard adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq.

Ply Sheet:	One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt, HPR Premium Glasfelt or HPR Polyscrim Plus adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)
Membrane:	One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq.
Surfacing:	Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings: <ol style="list-style-type: none"> 1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq. 2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq. 3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq. 4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq. 5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq. 6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq. 7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.
Maximum Design Pressure:	-60 psf (See General Limitation #7.)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. Steel
System Type D(2): All layers of insulation and base sheet simultaneously attached.
Deck: 18-22 ga Grade C steel deck attached 6' o.c. (every flute) using ¾" puddle welds to steel supports spaced 5 ft. o.c.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, ENRGY 3, ENRGY 3 PSI-25, ISO-95+GL, H-Shield Minimum 1" thick	N/A	N/A
<u>Top Insulation Layer (Optional)</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
Approved High Density Fiberboard, Structodek High Density Fiberboard Roof Insulation Minimum ½" thick	N/A	N/A
DensDeck, DensDeck Prime Minimum ¼" thick	N/A	N/A

Note: All layers of insulation and base sheet shall be simultaneously attached. See base sheet below for fasteners and density. Refer to Roofing Application Standard RAS 117 for insulation attachment requirements. Insulation shall have preliminary attachment, prior to the installation of the roofing membrane. At an application rate of two fasteners per board for insulation boards having no dimension greater than 4 ft., and four fasteners for any insulation board having no dimension greater than 8 ft.

Base Sheet: *(Option #1)* One ply of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium or ASTM D4897, Type II approved base sheet fastened to the deck using OMG Accutrak Fasteners and Plates spaced 12" o.c. in a 4" lap and 12" o.c. in two staggered rows in the center of the sheet.

(Option #2) One ply of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium or ASTM D4897, Type II approved base sheet fastened to the deck using SFS #12 fasteners with plates, OMG #12 or Heavy Duty Fasteners with OMG 3 in. Round Metal Plates or OMG Accutrak Fasteners and Plates spaced 9" o.c. in a 4" lap and 9" o.c. in two staggered rows in the center of the sheet.

Intermediate Coverboard: (Optional) ½" thick High Density Wood Fiberboard adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq.

- Ply Sheet:** One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 20-40 lbs./sq.
Or
One ply of HPR Torch Base, torch applied to base sheet (no intermediate coverboard)
- Membrane:** One ply of StressPly IV, StressPly IV UV Mineral, StressPly IV Mineral, StressPly IV Plus, StressPly IV Plus Mineral or StressPly IV Plus UV Mineral torch applied.
- Surfacing:** Optional for Stress Ply IV Mineral, StressPly IV UV Mineral, StressPly IV Plus Mineral or StressPly IV Plus UV Mineral. Required for StressPly IV or StressPly IV Plus. Apply one of the below or any approved coating.
1. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
 2. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
 3. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.
- Maximum Design Pressure:** -60 psf (See General Limitation #7.)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type D(3): All layers of insulation and base sheet simultaneously attached.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, ENRGY 3, H-Shield, Multi-Max FA-3 Minimum 1.5" thick	N/A	N/A
DensDeck, DensDeck Prime Minimum 1/4" thick	N/A	N/A
Approved High Density Wood Fiberboard Minimum 1/2" thick	N/A	N/A

Note: All layers of insulation and base sheet shall be simultaneously attached. See base sheet below for fasteners and density. Refer to Roofing Application Standard RAS 117 for insulation attachment requirements. Insulation shall have preliminary attachment, prior to the installation of the roofing membrane. At an application rate of two fasteners per board for insulation boards having no dimension greater than 4 ft., and four fasteners for any insulation board having no dimension greater than 8 ft.

Base Sheet: One ply HPR Tri-Base Premium
Fastening: OMG Flat Bottom Plates and #15 Roofgrip fasteners spaced 12" o.c. within 4" wide lap and 18" o.c. in two equally spaced staggered rows in the field.
Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)
Or
One or more plies of HPR Torch Base Sheet, torch applied
Membrane: One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80, or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.
Or
One ply of StressPly IV, StressPly IV UV Mineral, StressPly IV Mineral, StressPly IV Plus, StressPly IV Plus Mineral or StressPly IV Plus UV Mineral torch applied.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb/sq. or Black-Knight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat or minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-112.5 psf (See General Limitation #7)

Membrane Type: SBS/SIS/SEBS
Deck Type 2I: Steel, Insulated
Deck Description: 18-22 ga. steel Type B Grade 33 steel deck attached with Traxx/5 fasteners 6" o.c. (every flute) to steel supports spaced 6' o.c.
System Type D(4): All layers of insulation and base sheet simultaneously attached.

All General and System Limitations apply.

One or more layers of any of the following insulations.

<u>Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
ACFoam II, ENRGY 3, H-Shield, Multi-Max FA-3 Minimum 1.5" thick	N/A	N/A
DensDeck, DensDeck Prime Minimum 1/4" thick	N/A	N/A
Approved High Density Wood Fiberboard Minimum 1/2" thick	N/A	N/A

Note: All layers of insulation and base sheet shall be simultaneously attached. See base sheet below for fasteners and density. Refer to Roofing Application Standard RAS 117 for insulation attachment requirements. Insulation shall have preliminary attachment, prior to the installation of the roofing membrane. At an application rate of two fasteners per board for insulation boards having no dimension greater than 4 ft., and four fasteners for any insulation board having no dimension greater than 8 ft.

Base Sheet: One ply of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium fastened to the deck as described below:

Fastening: Tru-Fast 3" Metal Insulation plates with Tru-Fast HD fasteners, OMG 3" Galvalume Steel Plates with OMG Heavy Duty fasteners, OMG Flat Bottom Plates with #14 Roofgrip fasteners or SFS Intec Dekfast Galvalume Steel Hex plates with Dekfast #14 fasteners spaced 6" o.c. within 4" wide lap and 6" o.c. within three equally spaced staggered rows in the field.

Ply Sheet: One or more plies of HPR Glasbase, HPR Premium Glasbase, HPR Tri-Base Premium, HPR Glasfelt or HPR Premium Glasfelt adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq. (Note: Minimum two plies of ASTM D 2178, type VI or three plies of type IV is required for VersiPly 60 applications.)

Membrane: One ply of StressPly E, StressPly E FR Mineral, StressPly, StressPly FR Mineral, StressPly Plus, StressPly Plus FR Mineral, StressPly EUV, StressPly EUV FR Mineral, VersiPly 60, VersiPly 80 or VersiPly Mineral adhered with a full mopping of approved asphalt, HPR All Temp or Garlastic KM Plus within the EVT range and at a rate of 25 lbs./sq.

Surfacing:

Optional for FR or mineral surfaced Membranes. Required for non-FR or smooth surfaced membranes. Apply one of the below or any approved coatings:

1. 400 lb./sq. gravel or 300 lb./sq. slag in a flood coat of approved mopping asphalt at an application rate of 60 lb./sq. or in Black-Knight Flood Coat or Black-Knight LV Flood Coat at 70 lb./sq. or Black-Knight Cold at 5 gal/sq.
2. Minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
3. Energizer K Plus FR applied at 3.5 gal/sq with minimum two coats of Garla-Brite applied at min 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
4. WeatherScreen applied at min. 4 gal./sq. with minimum two coats of Garla-Brite applied at min. 0.5 gal/sq/coat, minimum two coats of Pyramic applied at min. 1.0 gal/sq/coat or minimum one coat of Pyramic applied at a min. 1.0 gal/sq and a minimum one coat of Solex applied at a min. 0.50 gal/sq.
5. WeatherScreen applied at min. 4 gal./sq. with #11 roofing granules at 60 lb./sq.
6. WeatherScreen applied at applied at min. 4 gal./sq. with roofing gravel applied at 400 lb./sq.
7. Green-Lock Membrane Adhesive applied at min 3-5 gal./sq. with roofing gravel applied at 400 lb./sq.

Maximum Design Pressure:

-135 psf (See General Limitation #7)

STEEL DECK SYSTEM LIMITATIONS:

1. If mechanical attachment to the structural deck through the lightweight insulating concrete is proposed, a field withdrawal resistance testing shall be performed to determine equivalent or enhanced fastener patterns and density. All testing and fastening design shall be in compliance with Testing Application Standard TAS 105 and Roofing Application Standard RAS 117, calculations shall be signed and sealed by a Florida Registered Engineer, Architect, or Registered Roof Consultant.
2. For steel deck application where specific deck construction is not referenced: The deck shall be a minimum 22 gage attached with 5/8" puddle welds with weld washers at every flute with maximum deck spans of 6 ft. o.c.

GENERAL LIMITATIONS:

1. Fire classification is not part of this acceptance, refer to a current Approved Roofing Materials Directory for fire ratings of this product.
2. Insulation may be installed in multiple layers. The first layer shall be attached in compliance with Product Control Approval guidelines. All other layers shall be adhered in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-40 lbs./sq., or mechanically attached using the fastening pattern of the top layer
3. All standard panel sizes are acceptable for mechanical attachment. When applied in approved asphalt, panel size shall be 4' x 4' maximum.
4. An overlay and/or recovery board insulation panel is required on all applications over closed cell foam insulations when the base sheet is fully mopped. If no recovery board is used the base sheet shall be applied using spot mopping with approved asphalt, 12" diameter circles, 24" o.c.; or strip mopped 8" ribbons in three rows, one at each sidelap and one down the center of the sheet allowing a continuous area of ventilation. Encircling of the strips is not acceptable. A 6" break shall be placed every 12' in each ribbon to allow cross ventilation. Asphalt application of either system shall be at a minimum rate of 12 lbs./sq.

Note: Spot attached systems shall be limited to a maximum design pressure of -45 psf.

5. Fastener spacing for insulation attachment is based on a Minimum Characteristic Force (F') value of 275 lbf., as tested in compliance with Testing Application Standard TAS 105. If the fastener value, as field-tested, are below 275 lbf. insulation attachment shall not be acceptable.
6. Fastener spacing for mechanical attachment of anchor/base sheet or membrane attachment is based on a minimum fastener resistance value in conjunction with the maximum design value listed within a specific system. Should the fastener resistance be less than that required, as determined by the Building Official, a revised fastener spacing, prepared, signed and sealed by a Florida registered Professional Engineer, Registered Architect, or Registered Roof Consultant may be submitted. Said revised fastener spacing shall utilize the withdrawal resistance value taken from Testing Application Standards TAS 105 and calculations in compliance with Roofing Application Standard RAS 117.
7. Perimeter and corner areas shall comply with the enhanced uplift pressure requirements of these areas. Fastener densities shall be increased for both insulation and base sheet as calculated in compliance with Roofing Application Standard RAS 117. Calculations prepared, signed and sealed by a Florida registered Professional Engineer, Registered Architect, or Registered Roof Consultant **(When this limitation is specifically referred within this NOA, General Limitation #9 will not be applicable.)**
8. All attachment and sizing of perimeter nailers, metal profile, and/or flashing termination designs shall conform with Roofing Application Standard RAS 111 and applicable wind load requirements.
9. The maximum designed pressure limitation listed shall be applicable to all roof pressure zones (i.e. field, perimeters, and corners). Neither rational analysis, nor extrapolation shall be permitted for enhanced fastening at enhanced pressure zones (i.e. perimeters, extended corners and corners). **(When this limitation is specifically referred within this NOA, General Limitation #7 will not be applicable.)**
10. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 9N-3 of the Florida Administrative Code.

END OF THIS ACCEPTANCE



NOA No.: 12-1003.19
Expiration Date: 12/02/13
Approval Date: 12/13/12
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